Journal of Advances and Scholarly Researches in Allied Education
Vol. XV, Issue No. 3, May-2018, ISSN 2230-7540

A Study on Analysis of Operating Efficiency of Air India and Indigo Airlines

Dr. Neelam Dhanda[1]* Mamta Sharma[2]

[1]Professor and Head of Department of Commerce, Kurukshetra University, Kurukshetra

[2]Assistant Professor, Department of Commerce, Kishan Lal Public College, Rewari

Abstract – The current airline industry of India has passed through so many changes like the standardization of airports, emergence of low cost carriers, privatization of airline industry in India and increase in the affordability of airline service among Indians. The present study is an attempt to analyze the operating efficiency of two scheduled domestic airlines i.e. Air India and Indigo Airlines. The study is based on secondary data collected from the Profit and Loss A/c and Balance Sheet associated with schedules, annexure available in the published annual reports of airlines and Capitaline data base. The data have been collected for the past twelve years ranging from 2004-05 to 2015-16 and compiled into tables and analyzed with the help of Ratio Analysis, Mean, Standard Deviation, Co-efficient of Variation and Compound Annual Growth Rate. It has been found in the present that the national carrier i.e. Air India could not earn profits during the entire study period. The result conducted on the expenses ratio and profitability ratio depicts that the operating efficiency as well as profitability of Air India has been poor during the study period. On the other hand, the financial performance of private carrier i.e. Indigo Airlines has been good as compared to Air India which is clearly depicted in the ratio analysis.

Keywords: Operating Efficiency, Profitability, Coefficient of Variation, Compound Annual Growth Rate, Indian Aviation Sector.

----------X----------

INTRODUCTION

The current airline industry of India has passed through so many changes like the standardization of airports, emergence of low cost carriers, privatization of airline industry in India and increase in the affordability of airline service among Indians. India is to be considered one of the toughest aviation markets in the world, due to high fuel prices, overcapacity and intense price competition, it is therefore important to identify critical drivers of performance, which enable the airlines to survive and succeed in this emerging market with huge growth potential ***(Saranga and Nagpal, 2016).*** In the year 1915, JRD Tata established an airline and the name of that airline was Tata Airlines. The airline was renamed in the year 1946 as Air India and the airline was nationalized in the year 1953. During the period 1953-1991, Air India was on the monopoly position in Indian airline sector but with the coming of economic sector reforms in the year 1991, the Indian airline sector was made open for the private airlines and some full service players as well as low cost carrier were entered in the Indian aviation sector. It increased the competition in the Indian domestic airline industry. As we know that the Indian consumers are price conscious and the market share of low cost carrier was increased and it is the main reason behind the emergence of Indigo Airlines as a leader.

Indigo started its operations in the year 2006 and has become the largest airline in the country at present. With this performance, it has been proved by the Indigo Airlines that the consistency in earning profits is possible even in the era of high level of competition in the domestic airline industry. Indigo Airlines is the first Indian airline, which has been delivered with the first Sharklet fuel saving wing tip devices equipped A320 aircraft. Sharklets fuel saving wing tip devices are innovative devices for the improvement in the aerodynamics and the fuel efficiency. Presently, Indigo is operating as an all Airbus operator as well as the largest low cost airline and the fleet size Indigo Airlines was 135 carriers as on May, 2017. On the other hand, Air India has Airbus and Boeing aircrafts with different configurations and the fleet size of Air India was 116 carriers. As per the literature review, there is a large number of national and international studies have been conducted on the various parameters of airlines industry but a few studies were made in the field of operational efficiency of airlines. Further, most of the present studies in the field of airline industry are general studies and few studies are conducted

specifically relating to the evaluation of financial performance of selected airlines. So, the present study has been conducted to analyze the operating efficiency of Indigo Airlines and Air India.

LITERATURE REVIEW

Saranga and Nagpal (2016) made an attempt to find out the linkages between various performances drivers, operational efficiencies and market performance. The study was conducted by using data envelopment analysis technique and the findings concluded that while some of the structural and regulatory factors have an undesirable impact on airline performance. It also found that the low cost carriers in India have managed to achieve significant operational efficiencies. In the study, cost efficiency is defined as technical efficiency which brings in better market performance by means of pricing power in the airline industry in India. **Barros and Peypoch (2009)** conducted a study to evaluate the operational performance of European Airlines. In the study, data envelopment analysis was used in two stage procedure. In the first stage, ranks were assigned to airlines as per their overall efficiency with the help of DEA model and then the operating efficiency of airlines was evaluated by applying a bootstrapped truncated regression. The study resulted that there were significant differences in efficiency among the airlines. **Capobianco and Fernandes (2004)** made an attempt to evaluate the financial performance and capital structure adopted by civil aviation companies. Data envelopment analysis technique was used with the aim to test the hypothesis that the airline industry's financial performance depends on companies keeping a reasonable level of leverage. The analysis of study concluded that there is an optimal range for financial leverage which depends upon size, return on assets and the level of fixed assets. The study found a direct relation with the level of efficiency for the companies with low (high) indebtedness and high (low) return.

RESEARCH METHODOLOGY

The present study is attempted to evaluate the operating efficiency of two scheduled domestic airlines. The data which has been used for analysis is secondary in nature, which is collected from the Profit and Loss A/c and Balance Sheet associated with schedules, Capitaline data base and annexure available in the published annual reports of airlines. The sample has been selected with the aim to make a comparison between national carrier and private carrier in terms of operating efficiency, which include Air India (National Carrier) and Indigo Airlines (Private Carrier). The data have been collected for the past twelve years ranging from 2004-05 to 2015-16 and compiled into tables. The tools and techniques for analysis include Ratio Analysis, Mean, Standard Deviation, Co-efficient of Variation and Compound Annual Growth Rate. Collected data have been complied in tables. Two types of tables have been used for each airline; one in which financial data related with variables have been complied and calculated ratios has been shown in second type of tables.

OBJECTIVES OF THE STUDY

The following are the main the objectives of the present study:

- To study the operating efficiency of the Indigo Airlines
- To evaluate the operating efficiency of Air India
- To make a comparative analysis of operating efficiency of Air India and Indigo Airlines.

Selected Operating Efficiency Ratios

1. **Power and Fuel Cost Ratio:** Power and fuel cost ratio is basically an expenditure ratio. It is calculated to know the financial position of an organization in respect to overall profitability and operating efficiency. It defines the relationship between power & fuel expenditure and net sales. With the help of this ratio, it can be estimated that how much amount is expended by an airline on power and fuel.

$$Power\ and\ Fuel\ Cost\ Ratio = \frac{Power\ and\ Fuel\ Cost}{Net\ Sales} \times 100$$

2. **Employee Cost Ratio:** It establishes the relationship between employee cost and net sales. It helps in estimating that how much amount is expended by an airline on its employees. The ratio is computed by diving employee cost to net sales. It signifies that how much amount of employee cost is being paid out of net sales.

$$Employee\ Cost\ Ratio = \frac{Employee\ Cost}{Net\ Sales} \times 100$$

3. **Selling and Administrative Expenditure Ratio:** Selling and administrative expenditure ratio is measured to obtain the operating efficiency of any business. This ratio explains the relationship between the selling and administrative expenditure to net sales.

$$Selling\ and\ Administrative\ Expenditure\ Ratio = \frac{Selling\ and\ Administrative\ Expenditure}{Net\ Sales} \times 100$$

4. **Cost of Goods Sold Ratio:** Cost of goods sold ratio is the measure of relationship between cost of goods sold and sales. It is also denoted by cost of sales to revenue ratio. Cost of goods sold generally means the total amount of direct expenses paid by the airline. This ratio

is used to analyze the operating efficiency of the business.

$$Cost\ of\ Goods\ Sold\ Ratio = \frac{Cost\ of\ Goods\ Sold}{Net\ Sales} \times 100$$

Cost of Goods Sold= Net Sales-Gross Profit

5. **Net Profit Ratio:** It is a profitability ratio which is calculated by the organization to know the financial position. It defines the relationship between net profit and net sales. Net profit is computed by deducting operating expenses and income tax from gross profit. Net profit ratio is computed to measure the overall efficiency and profitability of the organization. The higher the net profit ratio, the better it is.

$$Net\ Profit\ Ratio = \frac{Net\ Profit}{Net\ Sales} \times 100$$

ANALYSIS AND FINDING

Table I: Financial Data of Indigo Airlines

Year	Power and Fuel Cost (In `cr.)	Employee Cost (In `cr.)	Selling and Administrative Expenditure (In `cr.)	Cost of Goods Sold (In `cr.)	Net Profit (In `cr.)	Net Sales (In `cr.)
2006-07	145.35	60.82	114.55	145.35	-201.79	216.28
2007-08	674.16	151.90	303.97	674.16	-234.75	1132.83
2009-10	913.63	238.72	215.19	925.38	550.69	2605.48
2010-11	1523.63	313.65	291.85	1542.61	650.34	3833.42
2011-12	2876.28	521.81	1895.06	2910.26	127.87	5564.66
2012-13	4316.55	697.23	2078.70	4370.67	787.35	9203.08
2013-14	5518.50	928.94	2557.63	5577.61	474.42	11116.58
2014-15	5754.77	1188.69	2553.82	5833.31	1304.17	13925.34
2015-16	4786.91	1789.92	3115.12	4900.56	1989.72	16139.91
Mean	**2945.53**	**654.63**	**1458.43**	**2986.66**	**605.34**	**7081.95**
SD	**2206.18**	**566.06**	**1213.13**	**2240.41**	**711.10**	**5756.29**
CV (%)	**74.90**	**86.47**	**83.18**	**75.01**	**117.47**	**81.28**
CAGR (%)	**54.78**	**52.62**	**51.12**	**55.23**	**23.87**	**71.44**

Source: Compiled from Captaline Database

Table I exhibits the financial data of Indigo Airlines. The amount of power and fuel cost of Indigo Airlines was `145.35 cr. in 2006-07 which increased up to the year 2014-15 and decreased in the following year. The amount of employee cost was `60.82 cr. in 2006-07 which increased up to `1789.92 in 2015-16. The selling and administrative cost is an essential part of an enterprise's cost structure. In the beginning of study period, Indigo airline has spent comparatively less amount on its selling and administrative later on the amount has shown an increasing trend. The amount of selling and administrative cost has been highest in 2015-16. The amount of cost of goods sold has increased up to the year 2014-15 and decreased in the following year. As in case of airlines, the cost of goods sold is largely composited of power and fuel, for that reason cost of goods sold has decreased in the last year. The data for net profits depicts that the airline was not able to obtain the profits in the first two years of study period; it may be due to the introductory stage of airline hence resulted into losses.

The amount of net profit of Indigo Airlines is not consistent throughout the study period. The amount of net profit of the airline has been highest in 2015-16. The airline obtained relatively less amount of net sales in the first few years of study period as compared to the other years. The airline has spent comparatively less amount on employee cost as the mean value for employee cost is not as much of other spending. The highest mean value is found for COGS since the operations of an airline primarily depend upon the power and fuel, the foremost part of COGS. By comparing coefficient of variation, it is concluded that there is less variation in power and fuel cost. The greater variability is found in net profit. The comparative analysis on compound annual growth rate shows that the net sales have shown remarkable growth.

Table II: Ratio Analysis of Indigo Airlines

Year	Power and Fuel Cost Ratio (%age)	Employee Cost Ratio (%age)	Selling and Administrative Expenditure Ratio (%age)	COGS Ratio (%age)	Net Profit Ratio (%age)
2006-07	67.20	28.12	52.96	67.20	-93.30
2007-08	59.51	13.41	26.83	59.51	-20.72
2009-10	35.07	9.16	8.26	35.52	21.14
2010-11	39.75	8.18	7.61	40.24	16.97
2011-12	51.69	9.38	34.06	52.30	2.30
2012-13	46.90	7.58	22.59	47.49	8.56
2013-14	49.64	8.36	23.01	50.17	4.27
2014-15	41.33	8.54	18.34	41.89	9.37
2015-16	29.66	11.09	19.30	30.36	12.33
Mean	**46.75**	**11.54**	**23.66**	**47.19**	**-4.34**
SD	**11.84**	**6.47**	**13.79**	**11.64**	**35.42**
CV (%)	**25.32**	**56.10**	**58.26**	**24.66**	**-815.69**
CAGR (%)	**-9.72**	**-10.98**	**-11.85**	**-9.45**	**-8.59**

Source: Compiled from Captaline Database

Table II exhibits the ratio analysis of Indigo Airlines. The power and fuel cost ratio of Indigo Airlines ranged from 67.20% to 29.66% during the study period. It is clearly seen in the table that the ratio has decreased in the last two years of study period due to cut in ATF prices. The employee cost ratio of Indigo Airlines ranged from 28.12% to 11.09% during the study period. The employee cost ratio is not consistent during the study period. The data for selling and administrative expenditure ratio of Indigo Airlines depicts that the ratio ranged from 52.96% to 19.30% during the study period. It depicts that the airline has spent relatively more amount on selling and administrative cost in the first few years of study period as compared to other years.

The amount of net sales of above airline has increased during the entire study period, for that reason, the selling and administrative expenditure ratio is not as increased as the spending over selling and administrative has been increased. The COGS ratio is

found inconsistent during the entire study period. The data for net profit ratio illustrates that the ratio was negative in the first two years due to the net losses incurred by the airline. The net profit ratio of Indigo Airlines ranged from -93.30% to 12.33% during the study period. The analysis on mean values of expenses ratios exhibits that the mean value of cost of goods sold is more than the other mean values however it is close to the mean value of power and fuel expenditure. The airline obtained losses in first two years of study period resulting in negative mean value of net profit ratio of Indigo Airlines. The expenses incurred by the airline on all variables have reduced during the study period resulting in negative CAGR of all expenses during the study period. The result on coefficient of variation highlights that the amount of cost of goods sold has relatively less variations and more variability is seen in the amount of selling and administration expenditure.

Table III: Financial Data of Air India

Year	Power and Fuel Cost (In `cr.)	Employee Cost (In `cr.)	Selling and Administrative Expenditure (In `cr.)	Cost of Goods Sold (In `cr.)	Net Profit (In `cr.)	Net Sales (In `cr.)
2007-08	6,321.56	3,224.50	3,787.11	6,321.56	-2,226.16	13,638.35
2008-09	7,137.31	3,337.14	2,930.03	7,693.36	-5,548.26	13,224.52
2009-10	5,080.13	3,355.29	2,731.09	5,506.40	-5,552.44	13,108.62
2010-11	6190.14	3,751.49	1,101.53	6,190.14	-6,865.17	14,062.01
2011-12	8579.24	3,566.65	1,250.46	8,579.24	-7,559.74	14,675.30
2012-13	13426.91	3,254.73	520.02	13,426.91	-5,490.16	16,027.84
2013-14	9534.41	3,152.19	1,561.26	9,534.41	-6,279.60	18,370.96
2014-15	8512.89	2,466.64	1,693.22	8,512.89	-5,859.91	19,801.71
2015-16	5845.40	2,345.52	-	5,845.40	-3,836.78	19,992.33
Mean	**7,847.55**	**3,161.57**	**1,946.84**	**7,956.70**	**-5,468.69**	**15,877.96**
SD	**2554.41**	**466.64**	**1096.53**	**2485.82**	**1593.90**	**2806.94**
CV (%)	**32.55**	**14.76**	**56.32**	**31.24**	**-29.15**	**17.68**
CAGR (%)	**-0.97**	**-3.90**	**-10.86**	**-0.97**	**-**	**4.90**

Source: Compiled from Captaline Database

Table III exhibits the financial data of Air India. The data given in above table depicts that the spending over power and fuel expenditure is not consistent during the study period. The amount of power and fuel expenditure of Air India has been highest in the year 2012-13. The employee cost of Air India ranged from `3224.50 cr. in 2007-08 to `2345.52 cr. in 2015-16. It signifies that the amount of employee cost has decreased from 2011-12 to 2015-16. The data for selling and administrative cost shows that in the beginning of study period, the airline has spent relatively more amount for promoting the sales subsequently the cost has decreased. The data for net profit shows that the airline has obtained huge losses during the entire study period. It is clearly seen in the table that the amount of net losses has decreased in the last two years of study period which may be a positive sign for the above airline. The amount of net sales was `13638.35 cr. in 2006-07 and increased up to `19992.33 cr. in 2015-16. The amount of net sales of Air India has increased during the study period.

The comparative analysis on mean values of expenses shows that the average amount of COGS has been highest among the other mean values. The average amount of selling and administrative expenditure of Air India is less as compared the other expenses. It implies that the airline spends fewer amounts on sales promotion expenses as compared to other expenses. The airline has incurred huge losses during the entire study period resulting in negative mean value of net profit of Air India. The comparative analysis of coefficient of variation highlights that the less variability is seen in employee cost; on the contrary the more variability is seen in selling and administrative cost. The CAGR of net sales is more as compared to the CAGR of expenses.

Table IV: Ratio Analysis of Air India

Year	Power and Fuel Cost Ratio (%age)	Employee Cost Ratio (%age)	Selling and Administrative Expenditure Ratio (%age)	COGS Ratio (%age)	Net Profit Ratio (%age)
2007-08	46.35	23.64	27.77	46.35	-16.32
2008-09	53.97	25.23	22.16	58.17	-41.95
2009-10	38.75	25.6	20.83	42.01	-42.36
2010-11	44.02	26.68	7.83	44.02	-48.82
2011-12	58.46	24.30	8.52	58.46	-51.51
2012-13	83.77	20.31	3.24	83.77	-34.25
2013-14	51.90	17.16	8.50	51.90	-34.18
2014-15	42.99	12.46	8.55	42.99	-29.59
2015-16	29.24	11.73	-	50.11	-19.19
Mean	**52.53**	**21.92**	**13.43**	**53.46**	**-37.37**
SD	**14.17**	**4.94**	**8.82**	**13.88**	**11.34**
CV (%)	**26.97**	**22.51**	**65.67**	**25.97**	**-30.35**
CAGR (%)	**-1.07**	**-8.74**	**-15.49**	**-1.07**	**-**

Source: Compiled from Captaline Database

Table IV exhibits the ratio analysis of Air India. The power and fuel cost ratio of Air India ranged from 46.35% to 29.24% during the study period which signifies that the proportion of power and fuel to net sales has decreased in the last two years of study period. The employee cost ratio ranged from 23.64% to 11.73% during the study period. The airline has cut down the cost incurred on employees due to financial problems since suffering from losses during the entire study period. The same results have been for selling and administrative cost as it ranged from 27.77% to 8.55% during the study period. The COGS has increased during the study period resulting in increase in the ratio. The COGS ratio of Air India ranged from 46.35% to 50.11% during the study period. The net profit ratio of Air India has been negative throughout the study period since the airline incurred huge losses during the entire study period.

The comparative analysis on mean value of expenses ratio highlights that the mean value of COGS ratio is more as compared to other expenses ratio, on the contrary, the spending on selling and administrative has been lowest as compared to the other expenses. The airline could not earn profit even in a single year of study period hence resulted into negative mean value of net profit ratio. It is analyzed that the selling and administrative cost ratio has more variations and less variability is seen in employee cost ratio based on results of coefficient of variation. It is clearly seen in the table that the expenses ratio of Air India has reduced

during the study period resulting in their negative CAGR.

CONCLUSION

The Indian aviation sector is a crucial part of Indian economy as well as one of the fastest growing aviation industries in the world. There is a large scope of growth in this sector which will definitely affect the growth of Indian Economy positively. The present study is conducted to evaluate the operating efficiency of Indigo Airlines and Air India. It is analyzed from the study that the national carrier i.e. Air India could not earn profits throughout the study period. The resulted conducted on the expenses ratio and profitability ratio depicts that the operating efficiency as well as profitability of Air India has been poor during the study period. On the other hand, the financial performance of private carrier i.e. Indigo Airlines has been good as compared to Air India which is clearly depicted in the ratio analysis. It is concluded that there is a greater need to improve the financial position of Air India as it is a national carrier which leads the Indian economy.

REFERENCES

Barros, C. P., & Peypoch, N. (2009). An Evaluation of European Airliines' Operational Performance. International Journal of Production Economics , 122, pp. 525-533.

Capobianco, H. M., & Fernandes, E. (2004). Capital Sturcture in the World Airline Industry. Transportational Research Part A , 38, pp. 421-434.

http://dgca.nic.in/reports/Market.pdf

http://www.airbus.com/newsroom/press-releases/en/2013/01/indigo-becomes-the-first-indian-airline-with-sharklet-equipped-a320.html

http://www.spjimr.org/blog/will-indigo-make-history-buying-out-air-india

http://www.wns.com/Portals/0/Documents/Whitepapers/PDFFiles/651/36/WNS_Whitepaper_A%20New%20Flight%20Plan%20for%20India%E2%80%99s%20beleaguered%20airline%20industry.pdf

Saranga, H., & Nagpal, R. (2016). Drivers of Operational Efficiency and its Impacts on Market Performance in the Indian Airline Industry. Journal of Air Transport Management , 53, pp. 165-176.

Corresponding Author

Dr. Neelam Dhanda*

Professor and Head of Department of Commerce, Kurukshetra University, Kurukshetra